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10/589,208	05/14/2007	Christopher Jones	1022702-000316	6023

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EXAMINER

MARTEN, JERROD B

ART UNIT	PAPER NUMBER
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1797

NOTIFICATION DATE	DELIVERY MODE
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03/02/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/589,208	Applicant(s) JONES, CHRISTOPHER	
	Examiner JERROD B. MARTEN	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

1. Claim 30 is objected to because of the following informalities: the claim currently recites "VPA (vinyl phosphoric acid)", it appears to be clear from the specification that this is a typographical error and should read "VPA (vinyl phosphonic acid)" (**see specification, page 3, line 9**). Appropriate correction is required.
2. Claim 31 is objected to because of the following informalities: the claim currently recites, "C,.4 alkyl" and "hydroxy-substituted C,4 alkyl groups", it appears to be clear from the specification that "C,.4" and "C,4" should both read "C₁₋₄" (**see specification, page 4, line 5 and line 8**). Appropriate correction is required.
3. Claim 35 is objected to because of the following informalities: the claim currently recites "the medium is selected from process soaps...", it appears to be clear from the specification that this is a typographical error and should read, "the medium is selected from processed soaps..." (**see specification, page 5, lines 4-5**). Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 25-30 and 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. (US 6,071,434).

In regard to claims 25, Davis et al. discloses phosphorus containing polymer compositions (**see Abstract**) useful as a metal chelating agent in metal extractions (**see col. 4, lines 44-45**).

Davis et al. does not explicitly disclose the method of using the phosphorus containing polymer wherein the method comprises the steps of contacting a medium with an effective amount of the phosphorus containing polymer. However, it would have been obvious to one of ordinary skill in the art based on the teachings of Davis et al. that the use of the polymers in metal extractions would require contacting the phosphorus containing polymers with a

Art Unit: 1797

medium to perform the metal extraction as the step of contacting the polymer with a medium would be implicit to a method for carrying out a metal extraction.

In regard to claim 26, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses phosphorus containing polymers which would be useful in metal extractions that have a phosphonate or phosphinate end cap. **(see col. 13, claim 1**, where Davis discloses a formula, $X_2O_3PCHYCZ_2PO_2X-R$, in which $X_2O_3PCHYCZ_2PO_2X$ represents the phosphonate or phosphinate end cap and R represents polymer chain.)

In regard to claim 27, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses polymers useful in metal extractions wherein:

- the end cap polymer is of the formula:

$X_2O_3PCHYCZ_2PO_2XR$ **(see col. 13, claim 1, line 13)**

Wherein: X is H or an alkali metal, alkaline earth, a polyvalent metal, ammonium, or an organic base **(see col. 13, claim 1, lines 15-18)**, and R is a polymeric chain comprising between 1 and 100,000 groups, said groups being derived from at least one unsaturated compound wherein the multiple bond is activated chemically by an adjacent electron withdrawing group **(see col. 13, claim 1, lines 19-23)**, And Y and Z are each hydrogen, a PO_3A_2 , SO_3A , or CO_2A group wherein A is hydrogen, an alkyl moiety, or an aryl moiety **(see col. 13, claim 1, lines 23-25)**

Art Unit: 1797

In regard to claim 28, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses phosphorus containing polymers useful in metal extractions wherein:

- R is a polymer of acrylic acid (**see col. 13, claims 5 and 9, lines 37-44 and lines 55-56**)

In regard to claim 29, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses phosphorus containing polymers useful in metal extractions wherein:

- R is a polymer of carboxylic or sulphonic acid (**see col. 13, claim 9, lines 36-44**) selected from the group consisting of methacrylic acid, maleic acid (**see col. 13, claim 11, line 63**), vinyl sulphonic (**see col. 14, claim 11, line 2**), and 2-acrylamido-2-methyl-propane sulphonic acid (**see col. 13, claim 11, line 67**)

In regard to claim 30, Davis et al. discloses all claim limitations as set forth above. Davis et al. does not explicitly disclose the phosphorus containing polymers, for use in metal extractions, wherein the polymer chain, R, consists of a copolymer of VPA (vinyl phosphonic acid) and VDPA (vinyl diphosphonic acid). However, Davis et al. does disclose that the polymer chain may be a copolymeric chain consisting of monomer units of at least one monomer selected from phosphonic and other acids (**see col. 13, claim 5, lines 38 and 42**).

Further, Davis et al. discloses that the polymer chain may be comprised of monomer units chosen from VPA (**see col. 13, claim 7, lines 49-52**), VDPA (**see col. 13, claim 8, lines 52-54, where vinylidene diphosphonic acid is**

Art Unit: 1797

considered to be the same as vinyl diphosphonic acid), or others. In light of the teaching that the polymer chain may be copolymeric and comprised of VPA and VDPA, it would have been obvious to one of ordinary skill in the art to choose from among a finite list of possible monomers to arrive at using a copolymer of VPA and VDPA in the phosphorus containing polymer of Davis et al.

In regard to claim 32, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses that the phosphorus containing polymers are useful for squeeze treatment of oil wells (**see col. 4, lines 48-51**) and that the disclosed phosphorus containing polymers are suitable for use as chelating agents in metal extractions (**see col. 4, lines 45-46**). Thus, using the phosphorus containing polymers disclosed in Davis et al. to remove metal ions from crude oil would have been obvious to one of ordinary skill in the art as there would have been a reasonable expectation of success in light of the teaching that the polymers are suitable for use in oil well treatment and as chelating agents in metal extractions.

In regard to claim 33-34, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses that the phosphorus containing polymers are useful for treating water used or produced in oil wells including injection water, produced water, and water used for hydrostatic testing of pipelines (**see col. 4, lines 40-42**, where it is understood that oil wells contain crude oil and crude oil invariably contains some amount of naphthenic or fatty acid and treating water used or produced in oil wells would be expected to

Art Unit: 1797

contain some amount of crude oil) and that the disclosed phosphorus containing polymers are suitable for use as chelating agents in metal extractions (**see col. 4, lines 45-46**). Thus, using the phosphorus containing polymers disclosed in Davis et al. to remove metal ions from a medium consisting of water and naphthenic or fatty acids would have been obvious to one of ordinary skill in the art as there would have been a reasonable expectation of success in light of the teachings that the polymers are suitable for use in treating water used or produced in oil wells and as chelating agents in metal extractions.

In regard to claim 35, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses that the phosphorus containing polymers are useful as detergent builders (**see col. 4, lines 43-45**). While Davis et al. does not explicitly disclose using the phosphorus containing polymers to **remove metal ions** from processed soaps or cleaning formulations used in personal home care applications, it is known in the art that “builders” or “detergent builders” added to processed soaps or cleaning formulations are generally sequestration or chelating agents which work to reduce water hardness and enhance the cleaning efficiency of cleaning formulations by sequestering or effectively removing metal ions present in the same environment as the cleaning formulations within which they are contained. Therefore, it would have been obvious to one of ordinary skill in the art that in using the phosphorus containing polymers of Davis et al. as detergent builders that the polymers would be expected to remove metal ions present in water or the cleaning formulations in which they are contained.

In regard to claim 36, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses that the phosphorus containing polymers of the invention may be used to remove metal ions from a medium wherein:

- the metal ions are selected from Mg^{2+} , Ca^{2+} , Na^{2+} , or Fe^{2+}/Fe^{3+} (**see col. 6, lines 36-37** where it is disclosed that the phosphorus containing polymers may be used as detergent builders to sequester or effectively remove calcium (considered to be Ca^{2+} in this context) when used in conjunction with a cleaning formulation.)

7. Claims 25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. (WO 01/57050).

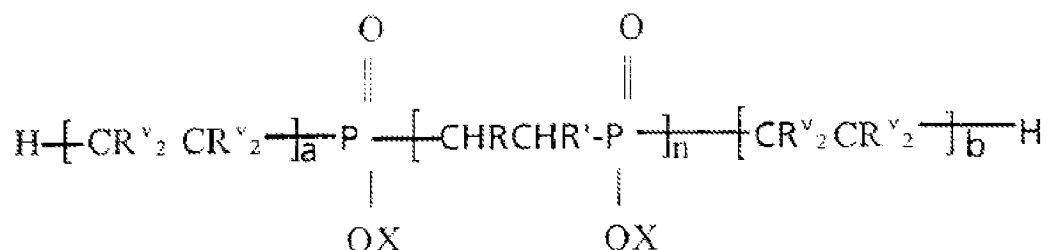
In regard to claims 25, Davis et al. discloses phosphorus containing polymer composition (**see Abstract**) useful as a metal chelating agent in metal extractions (**see page 8, lines 23-24**).

Davis et al. does not explicitly disclose the method of using the phosphorus containing polymer wherein the method comprises the steps of contacting a medium with an effective amount of the phosphorus containing polymer. However, it would have been obvious to one of ordinary skill in the art based on the teaching of Davis et al. that the use of the polymers in metal extractions would require contacting the phosphorus containing polymers with a medium to perform the metal extraction as the step of contacting the polymer with a medium would be implicit to a method for carrying out a metal extraction.

Art Unit: 1797

In regard to claim 31, Davis et al. discloses all claim limitations as set forth above. Further, Davis et al. discloses a phosphorus containing polymer useful in metal extractions wherein:

- the phosphorus containing polymer is a telomer of formula **(see page 24, claim 25)**:



wherein E (X in the reference) is hydrogen or a cation **(see page 25, line 1, claim 25 and page 21, lines 25, claim 1)**

R and R' are each independently selected from the group consisting of hydrogen, hydroxyl, carboxyl, alkyl, aryl, alkaryl, hydroxy-substituted alkyl, aryl, or alkaryl and carboxy-substituted alkyl, aryl, or alkaryl, provided that R and R' together have a total of lessn than 23 carbon atoms **(see page 25, line 1, claim 25 and page 21, lines 12-15, claim 1)**;

At least one Rv in each monomer is selected from the group consisting of hydroxyl, carboxy, sulpho, phosphono, amide, aceto, aryl, and halogen **(see page 25, lines 1-3, claim 25)**;

Art Unit: 1797

Each other Rv is independently selected from the group consisting of hydrogen, C₁₋₄ alkyl, carboxyl, sulpho, phosphono, hydroxyl groups, carboxy-substituted, sulpho-substituted, phosphono-substituted, and hydroxy-substituted C₁₋₄ alkyl groups (**see page 25, lines 5-7, claim 25**);

(a+b) is in the range of 5 to 200 and n is greater than 1 (**see page 25, line 9, claim 25**)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERROD B. MARTEN whose telephone number is (571)270-7066. The examiner can normally be reached on Mon.-Thurs., 7:30 a.m.-5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571)272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1797

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B. M./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797